

ABSTRACT OF THE DISCLOSURE

A method and apparatus for providing a weak inversion mode metal-oxide-semiconductor (MOS) decoupling capacitor is described. In one embodiment, an enhancement-mode p-channel MOS (PMOS) transistor is constructed with a gate material whose work function differs from that commonly used. In one exemplary embodiment, platinum silicate (PtSi) is used. In alternate embodiments, the threshold voltage of the PMOS transistor may be changed by modifying the dopant levels of the substrate. In either embodiment the flat band magnitude of the transistor is shifted by the change in materials used to construct the transistor. When such a transistor is connected with the gate lead connected to the positive supply voltage and the other leads connected to the negative (ground) supply voltage, an improved decoupling capacitor results.